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TO: Federal Communications Commission (FCC) Staff

SUBJECT: Expression of Interest – Rural Experiment
Docket No. 10-90

Background and Nature of Submitting Entity

PES has a history of innovation. Electricity first came to Pulaski in December of 1891, "for the purposes of lighting the streets and furnishing lights to the citizens thereof for domestic, business and church use."

The local newspaper reported the following account: "At exactly 7:00 PM last Saturday night, the 20th of December, the electric lights flashed out over Pulaski, sending a sun-like glory through her hitherto dark and murky streets. A vast concourse of people turned out to see this formal turning-on, and a great many gathered at the plant to witness it.... The evening passed awfully away, and all guests departed with reluctance from the scene of so much pleasure."

During its early years, PES was known simply as the City of Pulaski Light Department. At first, electricity was provided through an 80-horsepower diesel engine that lit the courthouse square and the adjoining businesses. By 1915, a small generation facility had been built at the corner of Fourth and Block Streets and city-wide electrification was underway. In 1935, Pulaski became the first Tennessee electric system to receive power from the newly formed Tennessee Valley Authority. The formation of TVA greatly enhanced the stability and growth of the local electricity supply. At that time, the City's Light Department served only 840 customers. In 1939, the City of Pulaski purchased a small number of rural electric lines from the Tennessee Electric Power Company and the Light Department began serving customers outside the city limits. In 1946, the Board of Mayor and Aldermen authorized the construction of 400 miles of new rural lines as a first step in promoting electrification throughout Giles County. Expansion continued for several decades, and in 1961 the City of Pulaski formed a separate Power Board (governed by its board of directors, which is appointed by the City of Pulaski's Board of Mayor and Aldermen) to govern the newly renamed Pulaski Electric System. PES has continued to upgrade its lines and construct substations to support Giles County's growth. PES currently operates 1,108 miles of electric distribution lines in a 434.6 square mile service territory and serves 14,228 electric customers.

In March of 2007, PES launched its state-of-the-art 100% fiber-optic network known as Energize. This fiber-to-the-home broadband network provides an abundance of television channels, incredibly fast high-speed Internet access and full-featured phone service to residents and businesses in and around Pulaski. Energize broadband services pass 5,219 premises, and 2,491 of those premises passed take one or more of the voice/video/data services offered, for a 47.73% take rate.

Related to Energize, PES also operates a state-of-the-art data center housed within a stormproof bunker. This facility is used by PES and outside businesses to house mission-critical data. In addition, operations for both entities are conducted from this tornado-proof bunker facility, which has independent generator and cooling facilities (built to Tier 2 standards) to insure continuous operation in adverse conditions.

Fiber plant is owned by the electric department, which employs the fiber in its Advanced Metering Infrastructure (AMI) architecture. The fiber infrastructure is used for automated, two-way communication between a smart utility meter with an IP address, data collectors for similar meters without access to fiber and so wirelessly read, and for two-way communication with utility assets in substations and in the field to monitor the assets of the utility and control them for optimum economics and reliability.

PES currently serves its electric customers in Giles County, assists other city departments in offering natural gas, water, sewer and sanitation services to the citizens of Pulaski and surrounding communities, and offers its "triple play" of video, voice and data services to a growing number of customers. PES will continue in its mission to empower Giles County's progress for years to come.

Geographic Territory and Anchor Institutions

Data from the FCC indicate that all eight of the census tracts served by PES are eligible for some level of support in this program, per the following table:

State	County	County Name	Tract ID
TN	47055	Giles	47055920100
TN	47055	Giles	47055920200
TN	47055	Giles	47055920300
TN	47055	Giles	47055920400
TN	47055	Giles	47055920500
TN	47055	Giles	47055920600
TN	47055	Giles	47055920700
TN	47055	Giles	47055920800

Following is a list of anchor institutions and community service organizations in these tracts that currently receive some form of free PES service, whether voice, video, or data, and that we would anticipate continuing to serve with broadband data:

- Bridgeforth Middle School
- City Of Pulaski - Airport
- Giles County Ambulance Service
- Giles County E911 Communications District
- Giles County High School
- Giles County School Board
- Giles County Chamber Of Commerce
- Giles County Courthouse
- Giles County Courthouse Annex
- Giles County Highway Dept
- Giles Economic Dev Commission
- Giles Health Dept
- Martin Methodist College President's House
- National Guard Armory
- Physicians & Surgeons Inc
- Pulaski City Hall
- Pulaski Elementary School
- Pulaski Fire Dept
- Pulaski Gas Warehouse
- Pulaski Parks & Recreation
- Pulaski Street Dept
- Pulaski Water Dept.
- Pulaski Water Filter Plant
- WKSR Studio
- Waste Water Treatment
- Water Dept Warehouse

Anchor and community institutions that also receive service from Energize include Hillside Hospital, NHC Healthcare, Meadowbrook Nursing Home, Martin Methodist College, and city parks.

ATT offers a competitive e-rate program at less cost than PES can buy service. However, ATT could not provide broadband service to the schools at acceptable data speeds and/or affordable rates. PES partnered with the Giles County Department of Education and ATT to lease fiber for delivery of these services to the schools. Consequently, all eight county schools (Giles County High School, Bridgeforth Middle School, Southside Elementary, Pulaski Elementary, Richland High School, Richland Elementary, Elkton Elementary, and Minor Hill Elementary) and the Board of Education receive high-speed service such that, in addition to having internet access, they are able to perform services such as video conferencing among schools to offer courses county-wide when teaching resources are only available from one school.

Through this filing, PES expresses its interest in completely underbuilding its electric distribution to provide broadband service to every customer inside its service area by extending fiber to pass an additional 9,009 customers.

Figure 1 represents the eight census tracts in which PES currently operates. The blue lines represent electric distribution lines currently serving homes and businesses. Note that some Census tracts are not fully served. State regulations constrain municipal utilities from offering broadband services outside of their electric service territory. PES is thus statutorily constrained from fully serving three of eight census tracts, as indicated. To maximize the number of entities eligible for the Rural Experiment, PES suggests that final rules formulated by the FCC respect regulatory limits placed on applicants, and focus on the benefit to the customers served in service areas considered.

Figure 1: Proposed Service Area

Figure 2 shows the proposed service area in relation to the 650 eligible Census blocks in Giles County. Subject to the statutory limits noted above, PES proposes to serve all 422 of the eligible blocks (in yellow) that its service territory touches. Our records indicate we would serve 3,739 customers in these blocks.

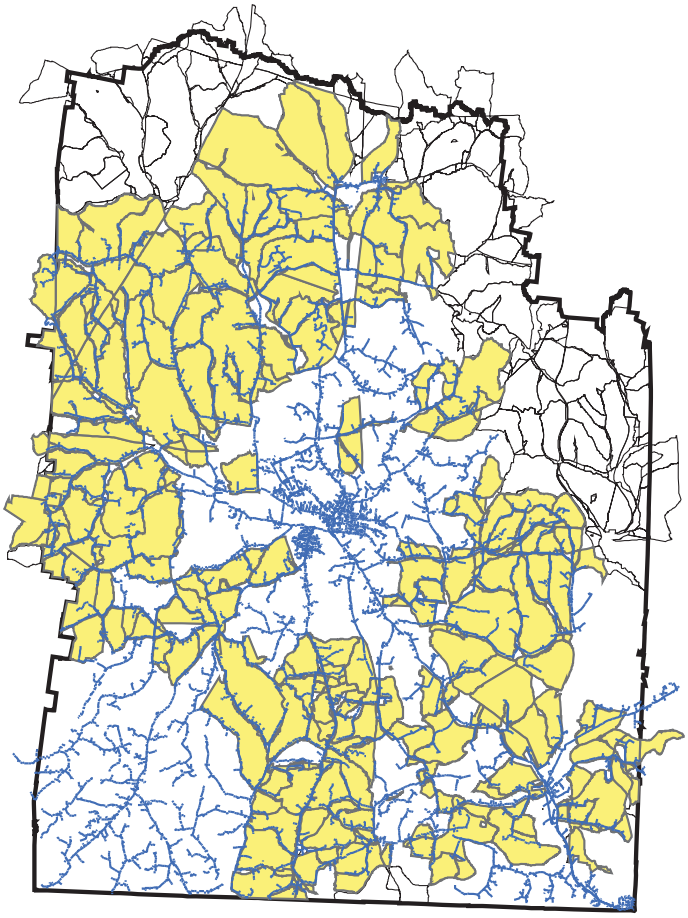

Figure 2: Proposed Census Blocks Served

Proposed Technology

There is a saying that "Today's broadband is tomorrow's dialup." The 3Mdown/768kup (or even 4Mdown/1Mup) services proposed will likely not fill demand for broadband services in the near term, as industry estimates place demand for broadband speed to roughly double each year. Wireless technologies, while making significant strides over the last decade, still must be replaced at least every decade. PES proposes to deploy Fiber-To-The-Home (FTTH) service to all current and future recipients of its electric power services. Fiber is a medium with a 50-year-plus lifespan that is limited in speed only by the electronics connected to it, and is capable of supplying tomorrow's speeds today, as evidenced by gigabit deployments already available.

Scalability

As previously stated, fiber bandwidth is limited only by connected electronics. Newer wave division multiplexing is making multiple fiber channels available on a single strand, further

enhancing the value of fiber investments currently being made. In addition, fiber is unaffected by electromagnetic interference and signal degradation. The level of service offered is the same at the headend as at the customer premise.

State and Local Government Support for Project

Members of our local government from city mayors to the Industrial Development Board recognize the value of our fiber broadband services. Support in the areas we have been able to deploy thus far has been universal, and requests for extension frequent. Fiber broadband has been a major factor in attracting businesses to Giles County, and broadband capability (fiber is usually requested) continues to be recognized locally as a driver in recruitment of business.

Existing Providers

PES began its fiber-to-the-home project in 2007 because of inadequate cable service by incumbent provider Charter, and because high-speed services from providers such as ATT were neither available widely or at competitive prices, as is often the case in small, rural communities. While wireless providers such as Verizon and ATT have services in Giles County, service levels are unacceptable for two primary reasons. First, broad sections of the county are without wireless coverage because of the hilly terrain. Service maps such as ConnectAmerica's do not accurately reflect the availability or ubiquity of service for this reason. Secondly, constantly increasing demand for bandwidth quickly renders existing services inadequate. High-bandwidth video-on-demand services such as Netflix quickly deplete available capacity. Both wireless and copper services also degrade with distance, and are provided on a 'best-effort' basis – meaning the speed of the services is rated at the signal's origin, not its destination. Performance of fiber-to-the-home service does not significantly degrade with distance.

Project Timeline

The nature of a fiber-to-the-home build is that adequate trunk fiber must be built from the headed to routes where individual fibers will be split off to serve customers. In PES's architecture, each headed fiber is ultimately able to serve 32 customers. It is far more efficient to complete a comprehensive system design and determine headend fiber requirements at the outset than to build plant in phases. The latter approach would require upgrade of headend facilities and an overbuild of existing trunk fiber with each additional phase, which would exponentially increase construction cost.

PES has already identified and built trunk fiber to its four highest customer density areas, and is currently finishing the distribution build to one of these (Elkton). Anchor institution customers only were served in the initial trunk builds. Available funds would be used in year one to complete these three distribution fiber builds using existing trunk fiber and to perform associated headend equipment upgrades to serve these areas. Concurrently with construction, an engineering and design study would be performed. This study would be utilized to prioritize construction for each of the next four years to reach the maximum number of customers possible with each extension.

Total Investment

PES currently operates 124 miles of fiber optic plant and 1,108 miles of primary electric lines. Some fiber trunk routes would necessarily need upgrade, so an estimated of 1,000 miles of existing electric line would be underbuilt with fiber plant in this project.

959 new customers would have service available in the first year of the project. PES would expect to provide additional service personnel, headend upgrades, fiber drops (service from main fiber to the home), and premise equipment from customer margins during each phase of construction. At the completion of the five-year project, PES would underbuild each new electric service extension with fiber, offering service to its customers with no additional capital or operating assistance from the program.

Table 1: Capital Cost Estimate

Description	Unit Price	Quantity	Total
Fiber and associated hardware	8,906	971	$8,647,726
Design/management/labor	14,489	971	$14,068,819
First-year fiber build	23,395	29	$678,455
First-year NOC hardware	1	35,000	$35,000
Engineering Study/business plan	1	250,000	$250,000
TOTAL			$23,680,000